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(54) Cable management

(57) A cable management system 2 for an elongate ear-phone cable 4 of a personal audio system 1, comprises a cable support clip 3 for supporting, in use on a user, an ear-phone cable 4 near ear-phones 5. The system 1 has storage means 12 provided with a spring-driven cable rewind reel for rewinding the ear-phone cable 4. In use, the ear-phone cable 4 extending between the support clip 3 and the storage means 13 is maintained under tension whilst a portion extending between the support clip 3 and the ear-phones 5 is substantially tension-free.

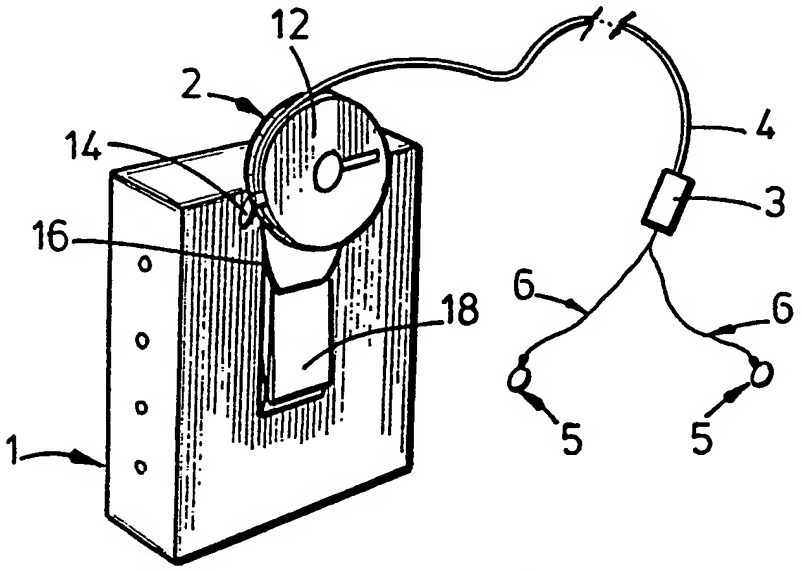

FIG. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

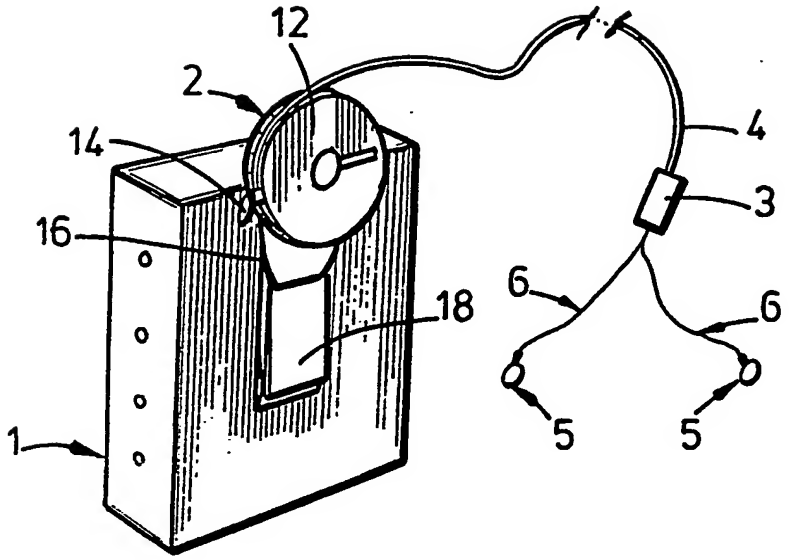

FIG. 1

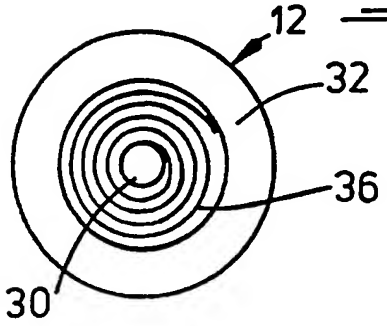

FIG. 4

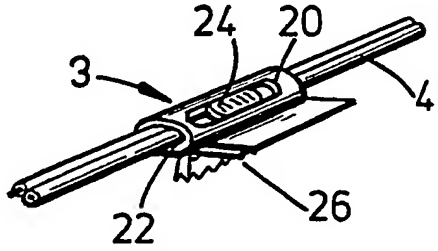

FIG. 2

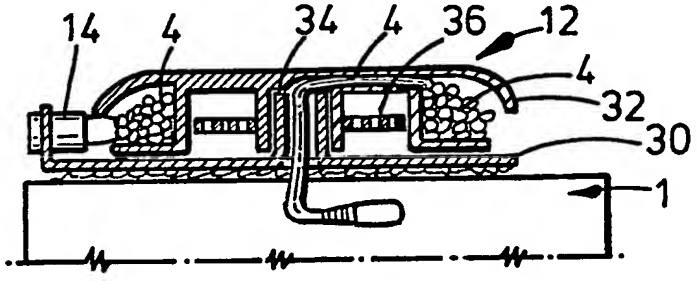

FIG. 3

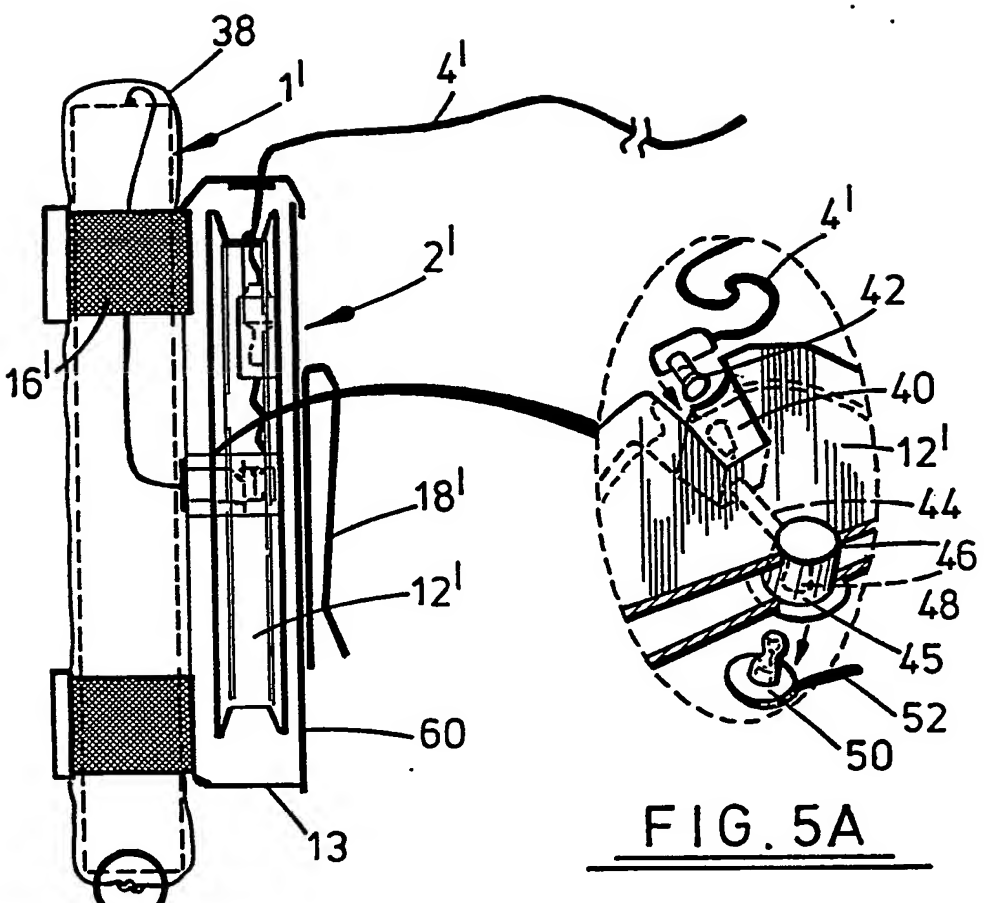

FIG. 5A

FIG. 5

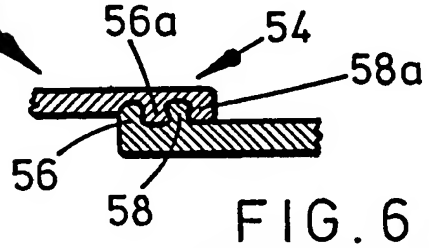

FIG. 6

CABLE MANAGEMENT

The present invention relates to a cable management system for use with the head- or ear-phone lead of a personal radio or cassette player such as a Walkman (Registered Trade Mark) Personal Stereo Apparatus.

A particular problem encountered by persons using such equipment is that the loose lead between the personal stereo and the head phones, can become caught up thereby causing one or more of the ear-phones to be dragged off the user's head, the other end of the lead dragged from the apparatus, and the lead, ear-phone or apparatus being damaged. This can be quite dangerous in certain situations e.g. in cycling where the cable can foul part of the cycle and possibly even cause a traffic accident, in jogging where the cable can be fouled by the user's limbs again possibly causing an accident, etc. Furthermore even when not in use, the lead can become tangled or knotted which is inconvenient and may cause damage to the lead and/or the ear-phones, which can be expensive.

It is an object of the present invention to avoid or minimise one or more of the above disadvantages.

The present invention provides a cable management system for an elongate ear-phone cable or lead of a personal

audio system which cable management system comprises cable support means formed and arranged for substantially securely supporting, in use on a user, a portion of said ear-phone cable proximal an ear-phone end of said ear-phone cable, and cable reel storage means proximal an input signal end of said ear-phone cable, said cable reel storage means being provided with resilient biasing means driven reel rewinding means formed and arranged for rewinding said ear-phone cable onto said cable reel storage means whereby in use of said system a portion of said ear-phone cable extending between said support means and said cable reel storage means is maintained under tension whilst a portion extending between said cable support and the ear-phone end is substantially tension-free.

Thus with a cable management system of the present invention, the main part of an ear-phone cable or lead can be held in a more or less taut condition thereby minimising the danger of its becoming hooked up in use and also providing for storage of the cable in a simple and convenient manner when not in use, without however subjecting the ear-phone itself to any pull in use thereby avoiding any discomfort to the user.

Preferably said support means is in the form of a clip or other attachment means formed and arranged to be

attached to a user's collar or a portion of clothing generally proximal the said user's neck.

Desirably said clip is provided with clamping means formed and arranged to clamp said cable to said clip at a user predeterminable position on said cable proximal said ear-phone end of cable, thereby to provide sufficient slack in the cable between the ear-phones and said clip to avoid any pull on the user's head or ears and any discomfort resulting therefrom.

Conveniently at least one of said cable reel storage means and said reel rewinding means is provided with user operable locking means formed and arranged to permit a user to lock the system with any desired length of cable deployed in tension-free manner as may on occasion be required in certain circumstances e.g. where the apparatus is desired to be used off the user's body e.g. on a table.

Desirably said cable reel storage means and said reel rewinding means are enclosed by a cover panel provided with an aperture to enable said cable to pass therethrough. The cover panel prevents damage to the cable when held in said storage means and prevents foreign objects from entering said reel rewinding means.

Preferably said resilient biasing means driven reel rewinding means is in the form of a pre-tensioned coiled spring means formed and arranged for rewinding an extended, in use, portion of said ear-phone cable onto said cable reel storage means.

Conveniently said cable management system is in the form of a discrete device provided with attachment means formed and arranged for attaching said cable management system to a personal audio system. Preferably a hook and loop type fastener is used but any suitable form of releasable attachment means may be used. Alternatively said cable management system may be formed integrally with a personal audio system.

In another respect the present invention provides a water resistant container for containing a personal audio system which waterresistant container includes a cable management system according to the invention.

Further preferred features and advantages of the present invention will become apparent from the following detailed description given by way of example of a preferred embodiment illustrated with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of a personal audio system in use of a cable management system of the invention;

Fig. 2 is an enlarged detail view of the cable support means shown in the embodiment in Fig. 1.

Fig. 3 is an enlarged detail cross-sectional view of the cable reel storage means shown in the embodiment in Fig. 1;

Fig. 4 is an enlarged detailed side view of the reel rewinding means of the embodiment shown in Fig. 1;

Fig. 5 is a side view of a personal audio system in use of a second embodiment of cable management system of the invention; and

Fig. 6 is a scrap section of a sealing mechanism used in the cable management system in Fig. 5.

As shown in Fig. 1, an audio system generally indicated by reference number 1 has attached thereto a cable management system 2. The cable system 2 comprises a cable support means clip 3 for supporting a cable 4 at an ear-phone 5 end 6 thereof to an article of clothing (not shown) generally in the region of a user's neck (not shown). The cable system 2 also comprises a rewinding cable reel 12 and a cam-type locking clamp 14 to lock the cable reel 12 against rewinding so that in special cases the whole of the deployed cable may be kept slack. The cable management system 2 is attached to the audio system 1 by a hook and loop type fastener 16.

In use, a user upon putting the ear-phones 5 on, can attach the support clip 3 to clothing around his neck so as to ensure that the cable 4 between the clip 3 and the ear-phones 5 is substantially tension-free. The audio system 1 may be attached to the user by a belt clip 18 or, more simply, placed in a user's pocket (not shown). To wind in any excess cable 4, the locking clamp 14 is released by the user 8 so that the rewinding cable reel 12 (shown in more detail below) rewinds the cable 4 between the support clip 3 and the cable system 2 into tension, thereby preventing any excess or loose cable being caught on any surrounding articles (not shown). In normal use the locking clamp 14 is kept in an unlocked condition so that the main part of the cable 4 is kept under tension.

Fig. 2 shows in greater detail the support clip 3 shown in Fig. 1. The clip 3 body 20 has a hollow shaft 22 through which the cable 4 slidably extends. An interference slide lock 24 clamps the clip 3 to the cable 4 in a gripping position thereof. The clip 3 is provided with a butterfly type spring fastener 26 which has serrated edges 28 for gripping clothing when in use.

Fig. 3 is a cross section through the rewinding cable reel 12. The cable reel 12 comprises a base 30 which is

attached to the audio system 1 by a hook and loop type fastener 16. The upper rotatable portion 32 of the reel 12 rotates about a hollow spindle 34 on the base 30 through which the cable 4 passes. The cable 4 is rewound around the cable reel 12 by the action of a pre-tensioned spiral spring 36. The cam-type clamp 14 jams against the cable 4 wound onto the reel 12 and locks the cable 4 against further rewinding.

Fig. 4 shows the pre-tensioned spiral spring 36 mounted between the base 30 and the rotatable portion 32 of the reel 12 so as to rotate the rotatable portion 32 with respect to the base 30.

Fig. 5 shows a second embodiment of the invention and will be described with reference to the embodiment in Figs. 2 & 3 and indicated by like reference number with a prime added.

In more detail an audio system 1^1 (shown in dotted line) is contained within a waterproof material container 38 which includes a cable management system 2^1. The cable management system 2^1 is also contained within the waterproof container 38 and is in close proximity to the audio system 1^1 in use of the container 38 and cable system 2^1. The cable system 2^1 comprises a rewinding cable reel 12^1 and a pre-tensioned spiral spring (not

shown) for rewinding a cable 4^1 around the cable reel 12^1.

The cable system 2^1 and any cable 4^1 rewound around the rewinding cable reel 12^1 is contained within a generally rigid housing 13 so as to prevent damage to the cable system 2^1. The housing 13 containing the cable system 2^1 is attached, e.g. bonded, to the side of the audio system 1^1 contained in the waterproof container 38 and a pair of hook and loop type fasteners 16^1 extend around the waterproof bag container 38 to draw it in around the audio system 1^1 and hold the latter more or less tightly to the rigid housing 13.

The housing is generally box-shaped with a removable sliding front panel 60 which provides access to the reel 12^1 e.g. to allow connection of the cable 4^1 of the user's headset to the reel socket 40. (Alternatively there could simply be used a hinged Cover panel).

The housing 13 also is provided with a belt clip 18^1 for attaching the complete assembly of audio system 1^1 contained within the container 38 and the cable system 2^1, to a belt (not shown) or other suitable item of a user's clothing.

The waterproof container 38 is generally in the form of a more or less flexibel bag of a substantially waterproof material, conveniently a plastics material such as polyethylene, polypropylene or polyvinylchloride. The container 38 is generally of a greater size than an average personal audio system, so that a variety of differently sized audio systems may be used with the container 38, and perhaps even one or more extra audio tapes (not shown) also accomodated within the bag.

Fig. 5A shows in more detail the cable reel 12^1 of the embodiment of Fig. 5. The reel 12^1 has a recessed radially extending socket 40 for receiving the jack plug 42 of the cable 4^1. The recessed socket 40 is electrically connected 44 to a connector 45 at the centre 46 of the cable reel 12^1, which connector 45 comprises an axially extending female socket 48 for receiving a male jack plug 50 of a connector cable 52 for connecting the cable system 2^1 to the audio system 1^1, the jack plug 50 being rigidly mounted in the base 53 of the housing 13 and acting as a spindle for the reel 12^1. The jack plug 50 and female socket 48 are formed and arranged to provide a continuous electrical connection between the cable system 2^1 and the audio system 1^1 irrespective of the angular position of the reel 12^1 and when the cable 4^1 is being reeled in or out from the cable reel 12^1.

Fig. 6 shows a cross section of the sealing mechanism 54 of the waterproof container 38. The sealing mechanism 54 is in the form of a zip type fastener comprising first 56 and second 58 elongate ribs formed and arranged for interengagement with a corresponding pair of first 56a and second 58a elongate ribs for providing a substantially watertight seal. The sealing mechanism extends around the base and sides of the container 38 so as to facilitate entry and removal of an audio system therefrom.

It will also be appreciated that in addition to the advantages of improving safety and reducing risk of damage to the cable or audio system by avoiding extended lengths of slack cable dangling about the user's body, a further significant advantage is that when the user wishes to stop using the ear-phone(s), then once he (she) has removed the ear-phone(s) from his (her) head, and the support clip been detached from the user's clothing, the cable is automatically and rapidly retracted and rewound into the storage means without the need for any effort on the part of the user or any need to even remember to rewind the cable. This can be very useful in the course of e.g. transfers during travel which is when personal audio systems are very often used.

CLAIMS

1. A cable management system for an elongate ear-phone cable or lead of a personal audio system which cable management system comprises cable support means formed and arranged for substantially securely supporting, in use on a user, a portion of said ear-phone cable proximal an ear-phone end of said ear-phone cable, and cable reel storage means proximal an input signal end of said ear-phone cable, said cable reel storage means being provided with resilient biasing means driven reel rewinding means formed and arranged for rewinding said ear-phone cable onto said cable reel storage means whereby in use of said system a portion of said ear-phone cable extending between said support means and said cable reel storage means is maintained under tension whilst a portion extending between said cable support and the ear-phone end is substantially tension-free.

2. A system as claimed in claim 1 wherein said support means is in the form of a clip.

3. A system as claimed in claim 2 wherein said clip is provided with clamping means formed and arranged to clamp said cable to said clip at a user predeterminable position on said cable proximal said ear-phone end of said cable.

4. A system as claimed in any one of claims 1 to 3 wherein at least one of said cable reel storage and said reel rewinding means is provided with user operable locking means.

5. A system as claimed in any one of claims 1 to 4 wherein said cable reel storage means and said reel rewinding means are enclosed by a cover panel provided with an aperture for passing said cable therethrough.

6. A system as claimed in any one of claims 1 to 5 wherein said resilient biasing means driven reel rewinding means is a pre-tensioned coil spring means.

7. A water resistant container for a personal audio system, which container is provided with a cable management system according to claim 1.

8. A container according to claim 7 which container is provided with a generally rigid or semi-rigid housing for the cable reel storage means.

9. A container according to claim 8 wherein is provided a swivelling electrical connector means disposed axially

of the cable reel storage means for electrical connection between a first cable means extending into the interior of the container for compling, in use, to a said personal audio system therein, and a second cable means wound onto the reel for coupling, in use, directly or indirectly, to ear phone means.

10. A cable management system substantially as described hereinbefore with particular reference to Figs. 1 to 5 of the accompanying drawings.

11. A resistant container substantially as described hereinbefore with particular reference to Figs. 5 and 6 of the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

Application number
GB 9224692.5

Relevant Technical fields

(i) UK Cl (Edition L) B8M: MB7

(ii) Int Cl (Edition 5) B65H, H04R

Search Examiner
G WERRETT

Databases (see over)
(i) UK Patent Office

(ii) ONLINE DATABASES: WPI

Date of Search
22 FEBRUARY 1993

Documents considered relevant following a search in respect of claims 1-11

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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P: Document published on or after the declared priority date but before the filing date of the present application.

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